ABSTRACT

THESIS: Modeling viscosity of thickened liquids used in dysphagia management using artificial neural networks.

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Dysphagia is estimated to affect approximately 8% of the world population according to the International Dysphagia Diet Standardization Initiative (IDDSI). Thickened liquids are recommended for patients with dysphagia to reduce the risk of choking and aspiration. There are various recipes and products available to thicken liquids. In this investigation, the classification of thickened liquids is based on viscosity. Viscosity is the resistance of a fluid to flow, and it refers to the thickness of the liquid. There are ongoing studies to find standardized levels of viscosity. In these studies, viscosity data for commonly used thickening products were collected by using a viscometer. This research project focuses on modeling the recorded viscosity levels using a computational tool. A multi-layer feed-forward artificial neural network will be trained using a backpropagation method to estimate viscosity of thickened liquids. The collected data will be used in training, validating, and testing our artificial neural network model. The goal of this investigation is to assess the consistency of thickening products in each

level of thickness. The result of this project may help healthcare professionals, dysphagia research scholars, and industries to understand the behavior of thickened liquid products.